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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10 025,776 | 12 26 2001 | Toshiyuki Kambe | PNDF-01210 | 5681 |
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YOUNG & THOMPSON
745 SOUTH 23RD STREET 2ND FLOOR
ARLINGTON, VA 22202

EXAMINER

VALENCIA, DANIEL E

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2874

DATE MAILED: 03/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/025,776

Applicant(s)

KAMBE, TOSHIYUKI

Examiner

Daniel E Valencia

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 03 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-25, 33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-17 and 20-25 is/are allowed.
- 6) ☐ Claim(s) 18, 19, 33 and 34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 26 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the communication filed on March 3, 2003. In accordance with the communication filed, claims 26-32 and 35 have been cancelled.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United

States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 18, 19, 33 and 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Thaniyavarn U.S. Patent Application Publication No. 2002/0025103 A1. Refer to the appropriate drawings or parts of the specification. Thaniyavarn discloses a polarization independent broad wavelength band optical switch/modulators with all the limitations of the abovementioned claims. Regarding claims 18, 19 and 33, Thaniyavarn discloses a waveguide-type optical control device (fig 3) comprising: a phase shifter (344) comprising two left and right optical waveguides, a first electrode (350) provided on the left side of the left optical waveguide, a second electrode (354) provided on the right side of the right optical waveguide, and a third electrode (352) provided between the two optical waveguides; a first directional coupler (342) that is connected to one end of the phase shifter and functions to branch an optical signal introduced through one of the two optical waveguides into the optical signal parts which are then introduced respectively into the two optical waveguides; and a second directional coupler (346) that is connected to the other end of the phase shifter and functions to couple the optical signal parts received respectively from the two optical waveguides, at least one of the first (360) and second (364) electrodes and the third electrode (362) having been extended into a part or the whole of the first directional coupler or the second directional coupler, the third electrode in its extended electrode portion being provided so that a longitudinal electric field is applied to one of the two optical waveguides (paragraph 59). Thaniyavarn further discloses that the third

electrode can be disposed on the top surface of the two optical waveguides in its extended position (paragraph 54), as described by instant claim 34.

Allowable Subject Matter

Claims 1-17 and 20-25 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: As to independent claim 1, the prior art alone or in combination fails to disclose or render obvious the waveguide-type optical control device comprising: a first and second directional couplers provided while leaving a predetermined spacing therebetween, said first and second directional couplers being constituted respectively by two right and left optical waveguides provided on a substrate; and a control unit provided between the first directional coupler and the second directional coupler, first, second, and third electrodes being provided respectively on the left side of the left optical waveguide, on the right side of the right optical waveguide, and between the two optical waveguides, said control unit functioning to control light, which passes through the two optical waveguides, according to a voltage applied to the first, second, and third electrodes, said first, second, and third electrodes being extended into the first and second directional couplers. For example, the Thaniyavarn reference discloses the same waveguide structure as the claimed invention; however, the reference does not teach or imply that the same electrodes in the control unit are extended into both directional couplers.

The prior art alone or in combination fails to disclose or render obvious a waveguide-type control device such as the one claimed in independent claims 6, 20, and 22. Specifically, Thaniyavarn, as the closest prior art, discloses a similar waveguide optical control device with electrodes in the phase shifting, and both directional-coupling regions. The reference shows electrodes on the outside of both waveguides and disposed in between the two waveguides in all three sections. However, the reference fails to teach that the corresponding electrodes that are electrically connected, or have the same voltages applied thereto.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Granstrand U.S. Patent No. 4,917,449 discloses a method of disposing a polarization directing optoelectronic coupler, wherein electrodes are used on a substrate surrounding a directional coupling region.

Ramaswamy U.S. Patent No. 4,142,775 discloses an optical signal-processing device, wherein the directional coupling regions has electrodes outside the two waveguides and in between the two waveguides.

Alferness U.S. Patent No. 4,390,236 discloses a tunable polarization independent wavelength filter, wherein electrodes are disposed in the directional coupling regions.

Riverie U.S. Patent No. 5,111,517 discloses a polarization beam splitter for guided light, wherein the electrode disposed in the directional coupling region is held at the same electric potential as the corresponding electrode in the phase shifting region.

Mak U.S. Patent No. 5,146,518 discloses an optical directional coupler device, wherein the electrode disposed in the directional coupling region is held at the same electric potential as the corresponding electrode in the phase shifting region.

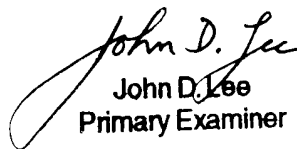
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel E Valencia whose telephone number is (703)-305-4399. The examiner can normally be reached on Monday-Friday 9:30-6:00.

The fax phone numbers for the organization where this application or proceeding is assigned are (703)-308-7724 for regular communications and (703)-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)-308-0956.



dv
March 11, 2003



John D. Lee
Primary Examiner